Alternative Methods to CADD Workflow

As a

Supplemental to "Designer's Guideline For Plan Sheet Development"

A method of plan sheet creation and establishing the clip boundary limits of a typical project were described in detail in the "Creating Plan Sheets...." and the "Designers Guideline For Plan Sheet Development" distributed by CAE on February 18, 1998 and June 16, 1998. While these are viable methods, there are probably as many methods of arriving at this as there are designers ! The following scenerio is another suggested method of accomplishing the same thing that may be easier for the user to do.

STEP 1 Retrieve files from Engineering Surveys and/or Photogrammetry and Mapping.
- All CADD files produced by the survey groups are archived by CAE and a corresponding list is transmitted to Roadway Design. (see example) This list will include both the "tape number" and "save set number" necessary to retrieve the files from CADD archives. You must complete the archive recovery section of the "File Recovery Form" and deliver it to CAE. CAE will then copy the requested files to your directory. (see example)

- For those files delivered in 3D format - open each necessary file and export 3D to 2D . Files from Engineering Surveys are delivered in 3D and will require this step while files from P&M are normally delivered in 2D.

STEP 2 Create alignment 2D file (Example - h4473des.dgn) for use in designing the new alignment and geometrics (if necessary)

- This may be a new file or a copy of a provided file

STEP 3 Create "Border file" (Example - h4473bdr.dgn) by utilizing seedfile for 2D files - seed2d.dgn
- place the plansheet at a zero active angle (utilizing the proper active scale) at desired coordinate value within the file. (xy=10000,10000 recommended for future use)
- use "fit" command to view the plansheet in the open view (View 1)
- use the "window center" command (snapping on the active point in the center of the sheet) save the view as "hp" (sv=hp) for future use in attaching as a reference file
"Window Area" the title block and fill out the appropriate information

STEP 4 Determine sheet layout

The first step is to determine the station values that each plan sheet will cover. This example project will begin at station 1263+00 and end at station value 1412+00 for a length of 14,900 feet. The limits of the survey are station 1255+00 to 1412+96. Utilizing a sheet coverage of 3000 feet per sheet, five (5) sheets would be necessary for complete coverage. Five sheets at 3000 feet per sheet would produce 15,000 feet of available coverage. Subtracting 14,900 feet to be utilized leaves 100 feet of unused coverage. This would not allow the user to begin at an even station as per ADOT Roadway Standards nor would it allow any room in the event that the project limits were to be changed to lengthen the project at either end. A good rule of thumb is to have a minimum of between 500 and 1000 feet available at each end in case this were to happen. A sixth (6th) plan sheet will be utilized for this project. Plan sheet coverage is computed as follows:

 6 sheets x 3000/sheet = 18,000 coverage available

18,000 - 14,900 necessary = 3100 feet unused to possibly center on the first and last sheets

Station 1263+00 minus 1550 feet = Station 1248+50 unadjusted starting point

Since station 1248+50 falls outside of the survey limits, the beginning of the survey, station 1255+00 will be utilized as the beginning of sheet coverage.   This produces 800 feet of unused available coverage at the beginning of the project.   The last plan sheet will utilize only 700 of the available 3000 feet of coverage.   The sheet limits are as follows:

Sheet 1   1255+00 to 1285+00
Sheet 2   1285+00 to 1315+00
Sheet 3   1315+00 to 1345+00
Sheet 4   1345+00 to 1375+00
Sheet 5   1375+00 to 1405+00
Sheet 6   1405+00 to 1412+00

The final plotting scale for this project is 1"= 100' (1:1200)

STEP 5 Create the "Master Layout File" (Example - h4473mas.dgn) by utilizing seedfile for 2D files - seed2d.dgn
•Attach (as reference files) all 2D topography and the construction alignment   2D file (Example - h4473des.dgn) design files utilizing the coincident attachment method
•Window on the first major station tic mark within the survey coverage to be used as a match line (example = station 1255+00)
•Copy the tic mark twice using keypoint snap to keep the tic mark in the same location as the original. One will become a match line while the other will insure that the tic mark will be visible after the reference files have been clipped.
•Use the "Extend line by distance" command to extend one of the tic marks (500 feet suggested) in both directions from the centerline to create a temporary match line
•Repeat for the remaining match line locations

STEP 6 Create plan sheet(s) as necessary using any of the following methods:
•Create files with MicroStation utilizing the "Master Layout File" as the seed file.
•Copy the "Master Layout File" with the proper plan sheet name utilizing any of the available system functions. (Windows File manager, Explorer, etc)
•Utilize the MicroStation "Save As" option under the "File" pulldown. (preferred method)

STEP 7 Open a plan sheet file and follow these steps
•"Window Area" on the area to include in this sheet
•Rotate the view (Rotate by 2 points) using the center of each match line.
The first selected point will become the left side of the rotated view and the second point will become the right side of the rotated view.
•Draw a line connecting the center of each match line
•Attach the "Border sheet" as a reference using the stored view "hp" . The attachment point is the mid point of the line just placed.
•If the reference file locations relative to the border are satisfactory, proceed to Step 8 (Clipping the reference files)
•If not, construct a perpendicular line from the mid point of the line (connecting the match lines) to the centerline. Move the "border reference file" from the original attachment point (active point) to the center of this new line.

STEP 8 Clipping the reference files
•Window on the match line areas and partial delete the match line as it crosses through the station labels. This will allow you to snap when placing a fence.
•Use the "fit active or fit all" command to view all of the match lines in the view and delete all match lines outside the sheet limits

•Use the "fit active" command to fit the sheet ot the view and "save settings"
•Use the "place fence shape" command to define the clipping limits of the line files by snapping to the line end points leaving the station labels within the fence. Activate the "reference clip bound" command. The match lines may now be deleted or moved to a level such as level 33 and turned off. (Try to avoid using level 34 as property lines are designated on this level) The file is now ready for design use, proceed to the next plan sheet.

Things to remember:

•You may re-clip any or all of the reference files any time or as often as you wish to get the results you desire.

•You may display the clipping area by utilizing the "View Attributes" dialog box under the "Settings" pulldown. This will probably help you in re-clipping any of the files you wish.

•You may have a similar method to do this work that you are more comfortable with.
 If so, please share this with us so we may share this with others.